## SPEC® CFP2006 Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.00 GHz, Intel Xeon Platinum 8164)

### SPECfp®2006 = Not Run

| SPECfp_base2006 = 127 |

<table>
<thead>
<tr>
<th>Test Sponsor: HPE</th>
<th>Test date: Oct-2017</th>
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</table>

### CPU2006 license: 3  
Tested by: HPE

### Software

- **Operating System:** Red Hat Enterprise Linux Server release 7.3  
  (Maipo)  
  Kernel 3.10.0-514.el7.x86_64
- **Compiler:** C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;  
  Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
- **Auto Parallel:** Yes
- **File System:** xfs

### Hardware

- **CPU Name:** Intel Xeon Platinum 8164  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz  
- **CPU MHz:** 2000  
- **FPU:** Integrated
- **CPU(s) enabled:** 104 cores, 4 chips, 26 cores/chip  
- **CPU(s) orderable:** 1, 2, 4 chip(s)
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 1 MB I+D on chip per core

### Benchmarks

<table>
<thead>
<tr>
<th>Benchmark</th>
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<td>53.1</td>
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L3 Cache: 35.75 MB I+D on chip per chip
Other Cache: None
Memory: 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other Software: None

Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages enabled by default
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
IRQ balance service was stop using "service irqbalance stop"
Tuned-adm profile was set to Throughtput-Performance

Platform Notes
BIOS Configuration:
Intel Hyperthreading set to Disabled
Thermal Configuration set to Maximum Cooling
LLC Prefetch set to Enabled
LLC Dead Line Allocation set to Disabled

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>8.88</td>
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<td>416.gamess</td>
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<td>435.gromacs</td>
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<tr>
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<td><strong>31.3</strong></td>
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<td>437.leslie3d</td>
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<td>23.7</td>
<td>397</td>
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<tr>
<td>444.namd</td>
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<td>470.lbm</td>
<td>6.23</td>
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<td>62.6</td>
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<td>318</td>
<td>61.3</td>
</tr>
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### SPEC CFP2006 Result

**Test Sponsor:** HPE  
**Hardware Availability:** Oct-2017  
**Software Availability:** Apr-2017  
**Test date:** Oct-2017  
**CPU2006 license:** 3  
**Tested by:** HPE

<table>
<thead>
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<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory Patrol Scrubbing set to Disabled</td>
</tr>
<tr>
<td>Workload Profile set to General Peak Frequency Compute</td>
</tr>
<tr>
<td>Energy/Performance Bias set to Maximum Performance</td>
</tr>
<tr>
<td>Workload Profile set to Custom</td>
</tr>
<tr>
<td>NUMA Group Size Optimization set to Flat</td>
</tr>
<tr>
<td>Sysinfo program /cpu2006/config/sysinfo.rev6993</td>
</tr>
<tr>
<td>Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)</td>
</tr>
<tr>
<td>running on DL560-Gen10 Mon Oct 2 20:57:07 2017</td>
</tr>
</tbody>
</table>

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo  
- model name : Intel(R) Xeon(R) Platinum 8164 CPU @ 2.00GHz  
- 4 "physical id"s (chips)  
- 104 "processors"  
- cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)  
  - cpu cores : 26  
  - siblings : 26  
  - physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25  
    26 27 28 29  
  - physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25  
    26 27 28 29  
  - physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25  
    26 27 28 29  
  - physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25  
    26 27 28 29  
- cache size : 36608 KB

From /proc/meminfo  
- MemTotal: 792067508 kB  
- HugePages_Total: 0  
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*  
- os-release:  
  - NAME="Red Hat Enterprise Linux Server"  
  - VERSION="7.3 (Maipo)"  
  - ID="rhel"  
  - ID_LIKE="fedora"  
  - VERSION_ID="7.3"  
  - PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"  
  - ANSI_COLOR="0;31"  
  - CPE_NAME=cpe:/o:redhat:enterprise_linux:7.3:GA:server  
  - redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
  - system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  

uname -a:  
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Platform Notes (Continued)
Linux DL560-Gen10 3.10.0-514.e17.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 2 18:34

SPEC is set to: /cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb1 xfs 447G 11G 437G 3% /

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program
reads system data which is "intended to allow hardware to be accurately
determined", but the intent may not be met, as there are frequent changes to
hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS HPE U34 09/29/2017
Memory:
48x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)

General Notes
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/cpu2006/lib/ia32:/cpu2006/lib/intel64:/cpu2006/sh10.2"
OMP_NUM_THREADS = "104"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc -m64 ifort -m64
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Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.mlmc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemSFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revG.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revG.xml
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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

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